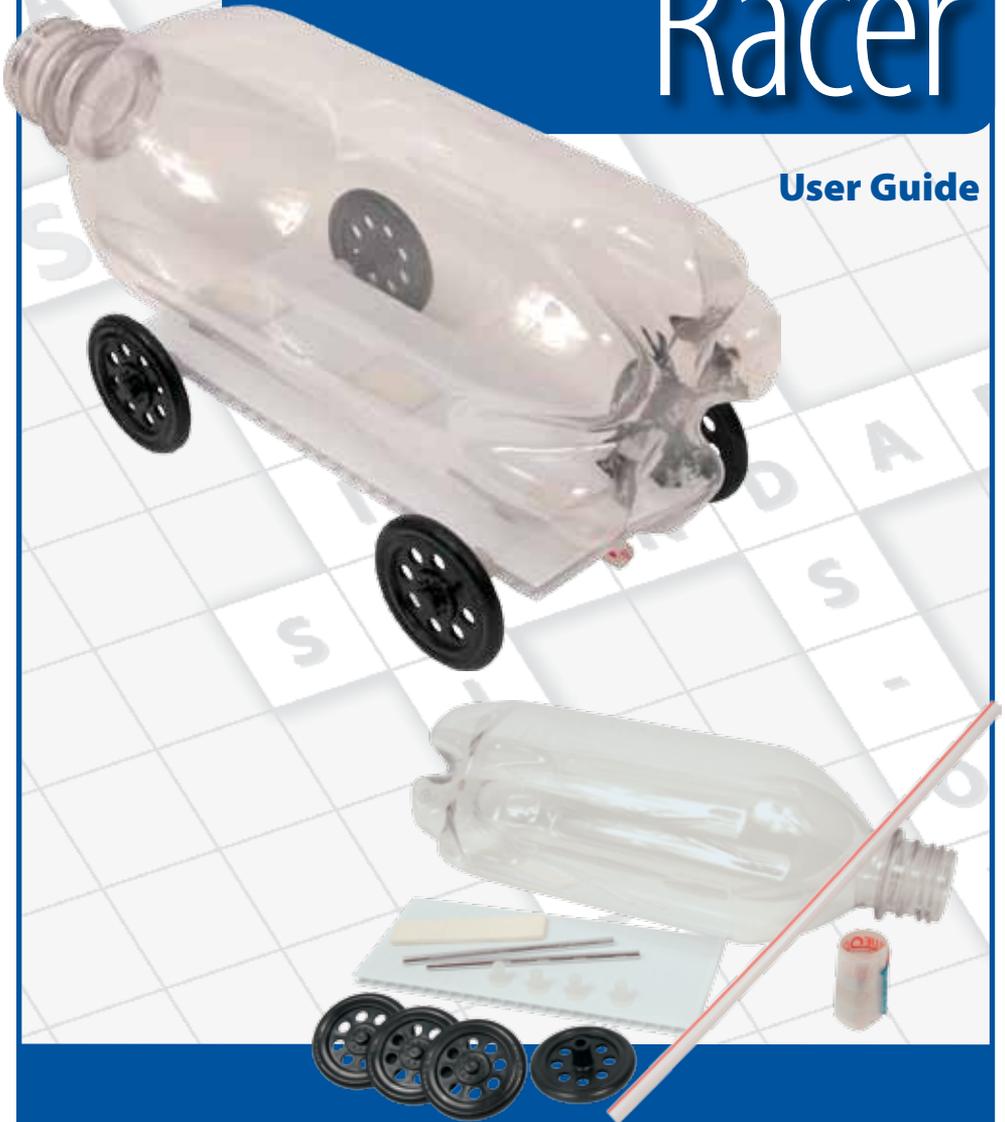# AP Bottle
Racer

User Guide

PITSCO
E D U C A T I O N

Cautionary and Warning Statements

- This kit is designed and intended for educational purposes only.
- Use only under the direct supervision of an adult who has read and understood the instructions provided in this user guide.
- Read warnings on packaging and in manual carefully.
- This kit is designed to be launched only with the AP Bottle Racer Launcher.

Materials Included

- Plastic bottle
- Corrugated plastic chassis
- 4 bushings
- 2 axles
- 4 wheels
- 3 glue dots
- 3 foam adhesive tabs
- Straw

Items Required (not included)

- Scissors
- Ruler (optional)
- Pen (optional)
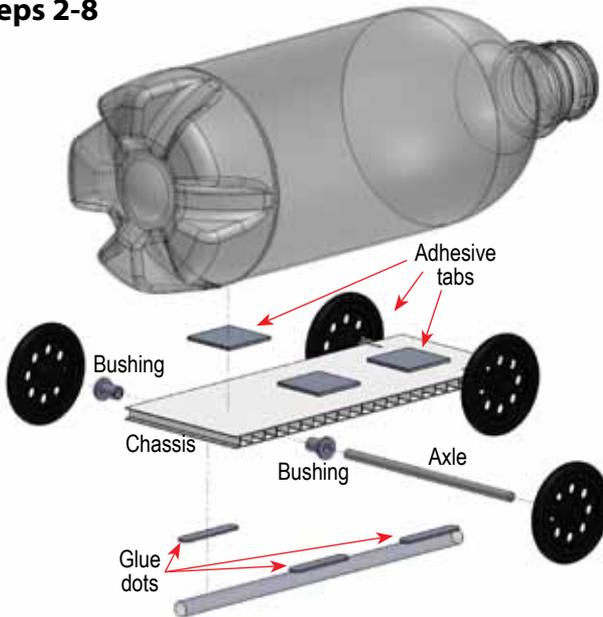- AP Bottle Racer Launcher
- Air pump

Designing a Racer

- When built, the opening of the bottle must not be in front of the back edge of the back wheel. If it is, you cannot properly load the racer into the launcher.
- This kit includes a bottle to use, but you can use other size bottles such as 20-ounce or two-liter bottles. But any bottle used must be made for a carbonated beverage (not water or tea).
- You can add parts to the racer, such as a nose cone to make the racer more aerodynamic. But weigh design options carefully: too much weight can slow down the racer, parts sticking out awkwardly could make it less aerodynamic, and so forth.
- If desired, students can decorate their racers with paint, markers, decals, and so forth. If using paint, however, **do not** spray paint the inside of the bottle (it dries poorly and can cause a mess when launched) and do not get paint on the inside of the bottle opening.

Assembling the Racer

1. Use the ruler and pen to make a line down the horizontal center of both sides of the chassis.
2. Determine where on the chassis you want the front and back axles. On the side of the chassis, press a bushing into the holes nearest the axle locations.
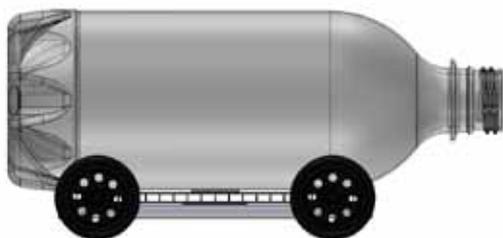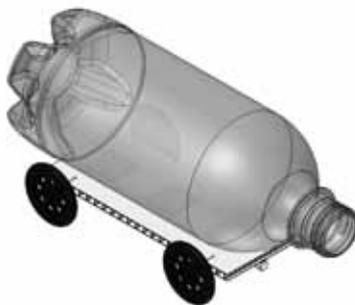3. Cut the straw to be 5" (12.7 cm) long.

Steps 2-8

4. Remove the backing of the glue dots and press them onto the length of the straw. Remove the second backing from the glue dots. This can be difficult to remove as the glue tabs are quite sticky.
5. Carefully press the straw down the center of the chassis.
6. Flip over the chassis. Remove the backing from the foam adhesive tabs and place them down the center of the chassis (the straw will be on the underside).
7. Thread an axle through one set of bushings and place a wheel on each axle end. Repeat with the other axle and wheels.
8. Remove the second backing from the adhesive tabs and place the bottle on the chassis, making sure the bottle neck is far enough back on the chassis that you can get it into the launch pod.

Your AP Bottle Racer is complete and ready to race using the AP Bottle Racer Launcher. If desired, you can add elements such as a nose cone, or you can decorate your racer.

Side view

Front view

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